

REMARKS

This Amendment is in response to the Examiner's comments set forth in the Office Action of August 17, 2009. Claims 1-14 and 16-26 have been amended. Claims 15 and 27 are cancelled. Claims 28-40 are new. Claims 1-14, 16-26, and 28-40 are currently pending in this application.

Reconsideration of this application is respectfully requested in light of the comments and amendments herein.

The Office Action

Claims 1-19 are rejected under 35 U. S. C. §103(a) in light of Yokota et al. (U.S. Patent No. 6,497,926) in view of Clarkee et al. (U.S. Patent No. 6,099,913).

Claims 20-26 are rejected under 35 U. S. C. §103(a) in light of Yokota et al. (U.S. Patent No. 6,497,926) in view of Clarkee et al. (U.S. Patent No. 6,099,913) as applied to claims 1, 15 and 25 above, and further is in view of Iwasaki et al. (U.S. Patent No. 6,800,558).

Claim 27 is rejected under 35 U. S. C. §103(a) as being unpatentable over Yokota et al. (U.S. 6,497,926) in view of Clarkee et al. (U.S. Patent No. 6,099,913) as applied to claim 1, in further view of Ruschak (U.S. Patent No. 5,885,660).

The Claims Patentably Distinguish Over the Cited References

Claims 1-19 are rejected under 35 U. S. C. §103(a) in light of Yokota et al. (U.S. Patent No. 6,497,926) in view of Clarkee et al. (U.S. Patent No. 6,099,913). This rejection should be withdrawn for at least the following reason. Yokota and Clarkee do not, individually or in combination, teach or suggest each element of the subject claims.

As amended, independent claim 1 recites a method for producing a thermal paper with a carrier substrate, an intermediate pigment layer, a thermal reaction layer and, optionally, one or more additional intermediate layers and/or top layers. The intermediate pigment layer is formed by means of a curtain coating method with an aqueous application suspension containing pigments, binding agents and, optionally, additional application additives and containing calcined kaolin. An aqueous application suspension with calcined kaolin with a particle size of 0.1 to 10 μm and a solid matter contents of 25 to 75% by weight is applied by means of the curtain-coating method at an operating speed of at least 500 m/min, wherein the application weight of the aqueous application suspension containing the calcined kaolin is adjusted to up to

30 g/m², based on dry substance, and simultaneously online, or offline in a separate coating method. The thermal reaction layer is formed and dried on the one or more intermediate pigment layers by means of the curtain coating method. The thermal reaction layer is formed and dried on the one or more intermediate pigment layers by means one of the curtain coating method, a roller application method, a roller spread coating method, and an air brush method, wherein the curtain coating method includes a curtain head having a clear exit gap width adjusted to 0.1 to 1 mm, and the nozzle throughputs for the respective application suspension are adjusted to 0.3 to 15.1 cm³/(cm working width x s). The curtain spreader head is adjustable to a single or multiple gap. Applicant respectfully asserts that the claimed limitations patentably distinguish over the cited references.

Particularly, as acknowledged by the Examiner, Yokota does not teach or suggest a method for producing a thermal paper having an intermediate pigment layer formed by the curtain coating method with an aqueous application suspension that is applied at an operating speed of at least 500 m/min. The Examiner, however, cites Clarkee as disclosing a curtain coating method at web speeds (100 cm/s), and asserts that it would have been obvious to one of ordinary skill to select operating speeds in excess of 500 m/min in curtain coating methods because Clarkee illustrates a high speed method having wide viscosity latitude negates the limitations of puddling and air entrainment and reduces the amounts of volatile components in the coating compositions. However, Applicant asserts that Clarke teaches that increased web speeds are only effective in certain conditions. Particularly, Clarke teaches that for smooth substrates and aqueous solutions having low viscosities (22 mPas), increasing viscosity leads to lower coating speeds (See Fig. 2). Only rough substrates and aqueous solutions having viscosities of 170 mPas result in higher coating speeds when the viscosities are increased. As such, the only substrates useful in Clarke have a surface roughness of between 2µm and about 20 µm (See col. 7, lines 14-16). As further seen in Example 1, a speed of 800 cm/s resulted in a non-uniform coating with air bubbles when surface roughness was 0.7µm; however, resulted in a uniform coating without air bubbles when surface roughness was 9.7µm. Clearly, the heightened speed is not advantageous for use with smooth substrates.

Applicant respectfully submits that one of ordinary skill in the art would be discouraged from combining the high operating speeds taught in Clarke with the method taught in Yokota, since Yokota's substrate demonstrates nominal roughness.(See col. 3 of Clarke, which explains

that likely all paper substrates meet the nominal roughness requirement). The Examiner has failed to point out any teaching or suggestion in Yokota that would motivate one skilled in the art to, not only increase the operating speeds, but also increase the surface roughness of the substrate. The Examiner fails to consider the additional factors in Clarke that affect the viability of increasing operating speed. Rejections based on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. (See MPEP §2143 citing *KSR v. Teleflex, Inc.*, 550 U.S. 398 (2007)). According to *KSR*, the key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reasons why the claimed invention would have been obvious. Applicant respectfully submits that the Examiner has failed to provide a proper reasoning as to why the proposed combination would have been obvious, making the rejection improper.

In addition, Applicant asserts that none of the cited references teach or suggest an exit gap width of the curtain spreader head being adjusted to 0.1 to 1 mm. According to the Examiner, Ruschak discloses this feature (See Rejection of Claim 27); however, Applicant respectfully disagrees. Ruschak teaches a basin divided into channels by a dividing wall that is gapped at the bottom to pass the liquid from the primary to the secondary channel. Ruschak discloses that the gap may be in the order of 0.1 inch (0.11 inch in the Examples). In contrast, the present invention claims a gap width of 0.1 to 1 mm. Applicant submits that 0.1 inch is equivalent to about 2.54 mm, significantly higher than the claimed range. The Examiner states that since Ruschak teaches that the gap depends on flow rate, one skilled in the art would select the claimed gap since Ruschak illustrates adjusting the gap so that the shear rate is relatively low. Applicant respectfully disagrees with this assumption. Ruschak specifically states that the gap can be on the order of 0.1 inch and will be several times larger for extrusion dies. "As a result, the shear rate to which the coating composition is subject is relatively low and non-Newtonian effects are minimized." (See col. 3, lines 5-13). Therefore, the low shear rate is due to the 0.1 inch gap, and there is no suggestion to implement a smaller gap, such as is presently claimed.

Finally, Applicant submits that none of the cited references teach or suggest that the nozzle throughputs for the respective application suspension are adjusted to 0.3 to 15.1 cm³/(cm working width x s), especially to 0.5 to 5.0 cm³/(cm working width x s), nor does the Examiner even address this limitation in the current Office Action.

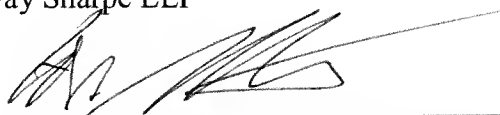
For at least the aforementioned reasons, Applicant respectfully asserts that the subject claims patentably distinguish over the cited references. Accordingly, the rejection of independent claim 1 (along with claims 2-14 and 16-26 that respectfully depend therefrom) should be withdrawn.

CONCLUSION

For the reasons detailed above, it is respectfully submitted all claims remaining in the application (Claims 1-14, 16-26, and 28-40) are now in condition for allowance.

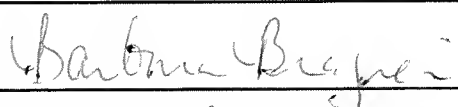
Respectfully submitted,

Fay Sharpe LLP



Scott A. McCollister, Reg. No. 33,961
The Halle Building, 5th Floor
1228 Euclid Avenue
Cleveland, Ohio 44115-1843
216.363.9000

15 January 2010
Date

CERTIFICATE OF MAILING OR TRANSMISSION	
I hereby certify that this correspondence (and any item referred to herein as being attached or enclosed) is (are) being	
<input type="checkbox"/> deposited with the United States Postal Service as First Class Mail, addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date indicated below.	
<input type="checkbox"/> transmitted to the USPTO by electronic transmission via EFS-Web on the date indicated below.	
Express Mail Label No.:	Signature: 
Date: <u>January 15, 2010</u>	Name: <u>Barbara Boazie</u>